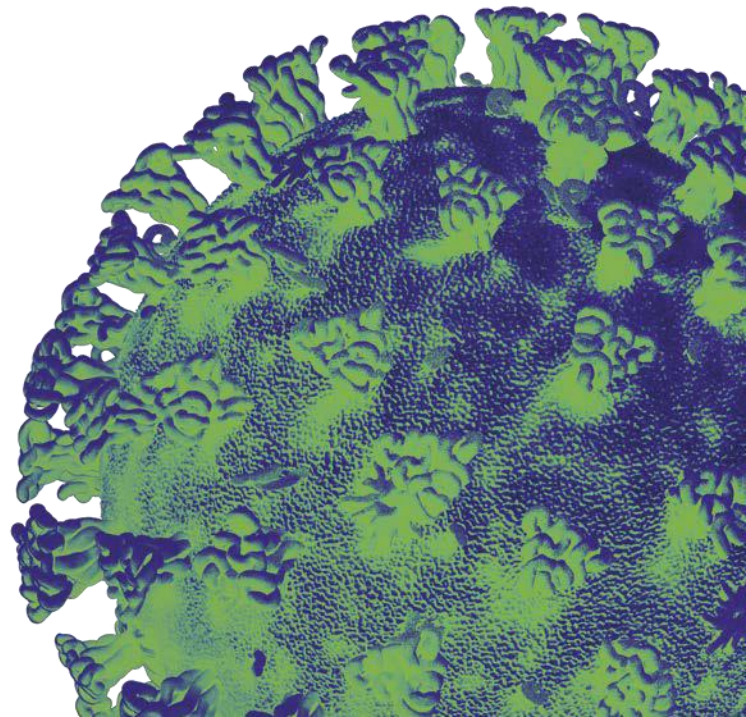
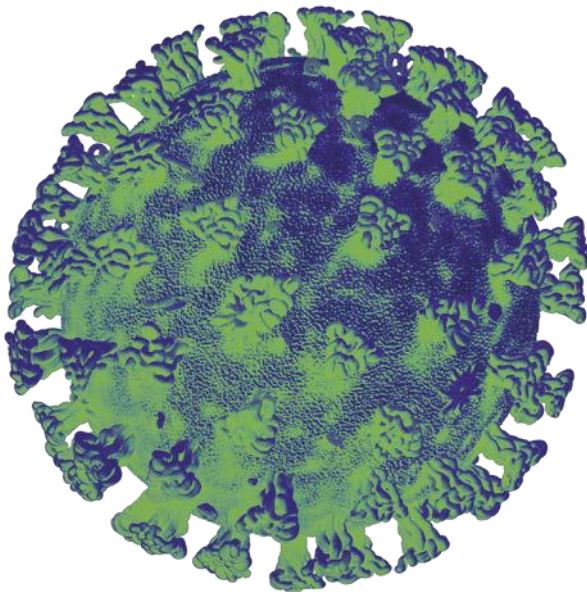
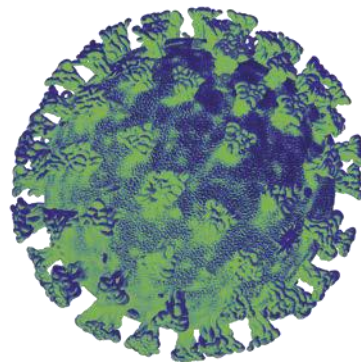




Llywodraeth Cymru  
Welsh Government

# Advice from the Technical Advisory Cell and Chief Scientific Advisor for Health 21 Day Review

7<sup>th</sup> October 2021



## **Advice from Technical Advisory Cell and Chief Scientific Advisor for Health for the 21 Day Review**

**7 October 2021**

This report provides advice on the following as part of the 7 October review:

1. Wales situation update
2. Effect of Increased Testing on Positivity
3. Evidence - Increased Testing in Wales
4. Reasonable mitigation measures
5. Reproduction Number
6. Work From Home Data
7. Self-Isolation of Household Contacts
8. Impact of Booster and 12-15 Vaccination Campaigns
9. Influenza and COVID Modelling

Advice from previous review cycles is referred to where relevant and is not repeated here.

### **1. Wales situation update**

- Overall cases of COVID-19 remain high across Wales, although the rate of growth has slowed, and test positivity has continued to decrease to 15.4% for the 7-day period ending 25 September.<sup>1</sup> Overall rates for Wales are 650 cases per 100,000. Most areas are above or near 1,000 cases per 100,000 for under 25s, most areas are seeing declines in over 60s at 224 cases per 100,000.<sup>2</sup>
- In the latest estimates for Wales from the Coronavirus (COVID-19) Infection Survey (CIS) it is estimated that 1.76% of the population in Wales had COVID-19 (95% credible interval: 1.41% to 2.15%). This equates to approximately 1 person in every 55 (95% credible interval: 1 in 70 to 1 in 45), or 53,300 people during this time (95% credible interval: 42,700 to 65,300).

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<sup>1</sup> [Covid-19 Wales Situational Report, Welsh Government, 1 October 2021](#)

<sup>2</sup> Covid-19 Bi-weekly Local Authority review, [Public Health Wales Tableau](#), 30 September 2021

- This compares to around 1 in 85 people in England, around 1 in 65 in Northern Ireland and around 1 in 55 people in Scotland.<sup>3</sup>
- The Joint Biosecurity Centre (JBC) consensus estimate of the reproduction number ( $R_t$ ) for Wales is between 0.8 and 1.1 (as at 30 September 2021), while Public Health Wales estimate of  $R_t$  for cases is around 1.1. (29 September 2021). Note that JBC's estimate is typically lagged by 2-3 weeks as it uses additional data. The PHW estimate, which uses a different methodology based on cases only, is lagged by around 1 week.<sup>4</sup>

## Hospital Activity

- As of 29 September 2021, there are 626 COVID-19 related patients (Suspected, Confirmed and Recovering) occupying a hospital bed (-19 since previous week), of which 437 were confirmed (26, or 6% lower than last Wednesday). There are 44 patients with Suspected or Confirmed COVID-19 in critical care beds in Wales; 120 lower than the maximum COVID-19 position of approximately 164. The overall number of patients in critical care remains high at 169 – 17 above the pre-COVID baseline of 152.<sup>4</sup>
- Deaths in confirmed cases in hospital, reported through PHW mortality rapid surveillance have been steadily increasing since July 2021, but remain at lower levels compared to previous waves, with 61 deaths reported in the most recent week.<sup>5</sup>
- A surveillance report from PHW<sup>6</sup> on characteristics of patients admitted to hospital with a positive COVID-19 test in the 4 weeks ending 19 September highlights 1 in 3 confirmed COVID-19 cases were unvaccinated and 99% of those who tested positive were under 60.
- Of these, 37% were unvaccinated. Nearly 13% of hospital patients with confirmed Covid were unvaccinated. Note that in the context of very high vaccine coverage in the population, even with a highly effective vaccine, it is expected that a large proportion of cases would occur in vaccinated individuals simply because a larger proportion of the population are vaccinated than unvaccinated.

## School aged children testing and case rates

- Rates have risen in recent weeks in the 5-11 and 12-16 age group; less markedly in the under 5's. Rates have been rising in these groups since the two weeks before schools returned following the summer break. Testing

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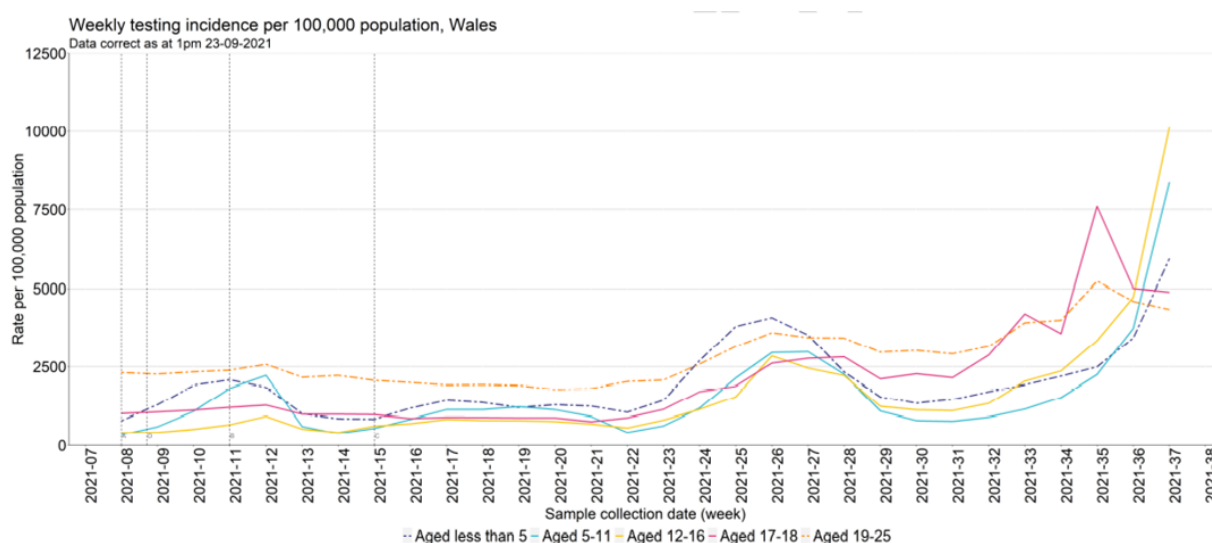
<sup>3</sup> [Coronavirus \(COVID-19\) Infection Survey, UK: 8 October 2021 - Office for National Statistics](#)

<sup>4</sup> [Covid-19 Wales Situational Report, Welsh Government, 1 October 2021](#)

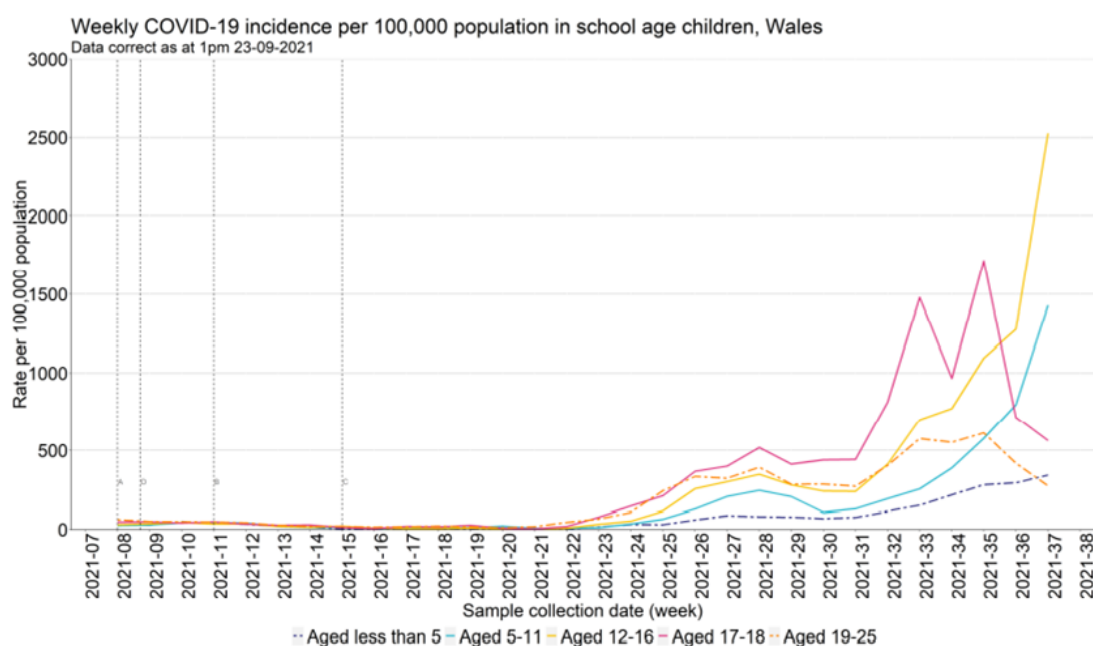
<sup>5</sup> Public Health Wales surveillance as at 30 September 2021, data available from [Public Health Wales Tableau](#)

<sup>6</sup> Vaccine status in cases and hospital inpatients, [Public Health Wales Tableau](#), report available under 'Vaccination' tab, as at 3 October 2021

episodes have similarly increased in these age groups. See charts below (data correct as of 23/09/2021).<sup>7</sup>



Testing episodes in children and young adults over time (Source: Public Health Wales)



COVID-19 case rates per 100,000 people in children and young adults over time (Source: Public Health Wales)

- Surveillance data from Public Health Wales indicate that the median incidence of pupil cases (whether attending school or not) was between 0.2 and 0.25 per 1000 pupil-days at risk during the school holidays. After 2 Sept (the start

<sup>7</sup> Covid-19 schools surveillance report, [Public Health Wales Tableau](#), available under 'Schools surveillance' tab, as 23 September 2021

of term), this rose to around 0.4 per 1000 pupil-days in primary schools and around 1 per 1000 pupil days in secondary schools.

- The distribution of incidence per 1000 pupil days in schools after the start of term now also shows some schools with rates higher than the general distribution (i.e. outliers) but this is not a major feature. An interpretation of this would be that, as before, transmission in schools does occur but is not the major driver of population rates.

### **Hospital admissions in children and young people**

- Children and young people (CYP) were significantly less affected than adults during the first wave of the COVID-19 pandemic, with regards to case numbers, disease severity, hospital admissions and death.
- A cohort study testing the hypothesis that clinical characteristics of hospitalised CYP with SARS-CoV-2 in the UK second wave, would differ from the first due to the combined impact of the alpha variant, school reopening and relaxation of shielding<sup>8</sup>, found no difference in overall morbidity in children between waves 1 and 2. Children admitted were slightly older in wave 2 but had similar comorbidities and average length of stay remained around 2 days. There was no difference in reported symptoms. More asymptomatic children were identified through testing, and around one fifth in hospital with COVID-19 were admitted for other reasons.
- The majority of children in hospital with symptomatic infection had no reported comorbidities (58.0% (938/1617)). Of these CYP without reported comorbidities, 70.4% (660/938) were  $\leq 11$  years, representing a significant group in whom there is no current licenced vaccine available, while 47.5% (278/585) of CYP of vaccine-licensed age had no reported comorbidities. 12.9% of children and young people admitted without comorbidities required critical care admission.
- Further data is required to assess the impact of the Delta variant and other contextual factors on these outcomes.

### **Long Covid**

- As reported in a summary from the Covid-19 Longitudinal Health and Wellbeing National Core Study<sup>9</sup>:
  - Long COVID symptom prevalence at 12 weeks post SARS-CoV-2 infection is uncertain and estimates vary by study design, ranging from 2.3%-37% in those infected [Medium Confidence].

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<sup>8</sup> [ISARIC: Comparison of children and young people admitted with SARS-CoV-2 across the UK in the first and second pandemic waves – prospective multicentre observational cohort study, 9 September 2021](#)

<sup>9</sup> [Short Report on Long Covid, COVID-19 Longitudinal Health and Wellbeing National Core Study, July 2021](#)



- Irrespective of the approach to measurement, post-acute symptom prevalence was highest in females, adults aged 50 to 69 years, people with a pre-existing health condition, and those with signs of high viral load at the time of infection.
  - Fatigue is the most frequently reported persistent long COVID symptom [High Confidence]. No clear individual syndromes have yet been identified [Medium Confidence]. Consistent risk factors across studies include increasing age, female sex, overweight/obesity, pre-existing asthma, pre-pandemic poor physical and mental health and hospitalisation for initial infection [High Confidence].
  - The proportion reporting symptoms limiting daily living range from 1.2% in young adults to 4.8% in middle age [High Confidence].
- Recent experimental estimates from the ONS Covid-19 Infection Survey indicate that the prevalence of symptoms that remain 12-weeks after COVID-19 infection range from 3.0% based on tracking specific symptoms, to 11.7% based on self-classification of long COVID, using data to 1 August 2021.<sup>10</sup>

### Long Covid in Children and Young people

- Evidence of long COVID prevalence specifically in school-aged children is still limited.
- Some published estimates<sup>11</sup> suggest that it does occur but is uncommon, 25 (1.8%) of 1,379 children (all ages) experienced symptoms for ≥56 days [Medium Confidence].
- Recent findings (pre-print, not peer-reviewed) from the Children and young people with Long Covid (CLOcK) cohort study of 3,065 11-17 year olds<sup>12</sup> found that up to one in seven (14%) of those who caught SARS-CoV-2 may have symptoms linked to the virus 15 weeks later.
- 14% more young people in the group testing positive for SARS-CoV-2 had three or more symptoms of ill health, including unusual tiredness and headaches, than those in the test negative group, while 7% (one in 14) more had five or more symptoms.
- Two classes were also identified in this study, characterised by “few” or “multiple” symptoms. The latter class was more frequent among test-positives, females, older children and young people, and those with worse pre-test physical and mental health.

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<sup>10</sup> [Technical article: Updated estimates of the prevalence of post-acute symptoms among people with coronavirus \(COVID-19\) in the UK: 26 April 2020 to 1 August 2021](#)

<sup>11</sup> [Molteni, E., et al., Illness duration and symptom profile in a large cohort of symptomatic UK school-aged children tested for SARS-CoV-2. The Lancet, Child & Adolescent Health, 2021.](#)

<sup>12</sup> [Long COVID - the physical and mental health of children and non-hospitalised young people 3 months after SARS-CoV-2 infection; a national matched cohort study \(The CLOcK\) Study, Research Square \(preprint\), 2021](#)

## 2. Effect of Increased Testing on Positivity

- The number of positive diagnostic tests for SARS-CoV-2 is a critical metric that is commonly used to assess epidemic severity and the efficacy of current levels of control. However, a proportion of individuals infected with SARS-CoV-2 may never seek or receive a diagnostic test, while many of those who are tested may receive a false negative result. Consequently, cases reported through testing of symptomatic individuals represent only a fraction of the total number of infections, and this proportion is expected to vary depending on changes in natural factors and variability in test-seeking behaviour.<sup>13</sup>
- Testing rates will have increased in response to ending summer holidays and resumption of regular school LFD testing (see figures above)
- Beyond this, it is difficult to say what drives case ascertainment as genuine increases in COVID-19 will increase both testing and positivity; it is not possible to say what is increased ascertainment (through increased testing) and what is genuine increased incidence.
- Regarding testing rates in the population, our calculations are different to those in England and Scotland so the rates aren't directly comparable between nations. However, the trends within nations are valid. There have been very large and sharp rises in testing in <11 and 11-17 age groups since about week 30, and a lesser rise in the 26-34 age group. Other ages have not changed greatly.

## 3. Evidence - Increased Testing in Wales

- The way in which testing rates are calculated are different in Wales when to those in England and Scotland and therefore rates are not directly comparable between nations.
- However, trends within nations are valid. There have been very large and sharp rises in testing in <11 and 11-17 age groups since about week 30 (ending 1<sup>st</sup> August 2021), and a lesser rise in the 26-34 age group. Other ages have not changed greatly.

## 4. Reasonable Mitigation Measures

- The epidemic is entering a period of uncertainty with rapidly altering patterns of behaviour associated with schools reopening and more people returning to workplaces.<sup>14</sup>
- The country has been able to move to alert level 0 as a direct result of collective efforts across society, including the successful vaccination programme. Over a sustained period, the vast majority of people, with

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<sup>13</sup> [Estimating the proportion of SARS-CoV-2 infections reported through diagnostic testing, medRxiv, February 2021](#)

<sup>14</sup> [EMRG: Consensus statement on COVID-19, 1 September 2021, gov.uk](#)

appropriate support (e.g. financial support to self-isolate), have adhered to a range of protective behaviours that successfully reduced the risk of infection.

- While vaccination has weakened the link between infection and severe illness, the link has not been broken. Entering the autumn and winter, this means controlling levels of infection remains key to minimising the personal and societal impact of COVID-19. With fewer regulations in place, maintaining behaviours to protect ourselves and those around us, remains fundamentally important. It is recognised this does not simply mean asking individuals to be more responsible.
- Promoting actions proven to reduce the risk of infection needs to operate at multiple levels, including: physical changes to environments; action to promote social norms, individual knowledge, skills and beliefs; effective risk communication; working with the public to develop policies; and monitoring progress.<sup>15</sup> The importance of a collective response to the pandemic has been highlighted throughout the last 18 months in Wales.
- To support the move to alert level 0 and beyond, TAG has previously referred to the importance of multiple protective actions and policies in order to reduce transmission of SARS-CoV-2.<sup>16</sup> This can be described as a “Swiss cheese” approach to preventing transmission. While each slice of Swiss cheese has many holes, it is not possible to see through a stack of slices. In other words, a combination of behaviours and supportive actions can ensure safe environments in which we can live, work and learn.
- This approach has been summarised in a [COVID-Code](#), which sets out the core behaviours that the public will be familiar with and the vast majority of people have undertaken over the past 18 months. This means **self-isolating at home if unwell and seeking a test if displaying COVID-19 symptoms; self-isolating if displaying COVID-19 symptoms or having been advised to do so by NHS Test Trace Protect; supporting others required to self-isolate; and getting vaccinated, including boosters, while encouraging others to do so.**
- In addition, where possible, **it remains important to: minimise time spent mixing with others; meeting outside; keeping windows and doors open when inside; practising good hand hygiene; and working from home when feasible. As is still required in most indoor public places, wearing a face covering will also contribute to reducing transmission.**
- **Looking specifically at ventilation, following existing workplace guidance<sup>17</sup> reduces the risk of COVID-19 transmission in schools and businesses.** Schools in Wales started to receive carbon dioxide (CO<sub>2</sub>) monitors and guidance for their use in October. The monitors are portable and will show CO<sub>2</sub> levels with a simple traffic light display of red, amber or

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<sup>15</sup> [Staying 'Covid-safe': Proposals for embedding behaviours that protect against Covid-19 transmission in the UK, British Journal of Health Psychology, August 2021](#)

<sup>16</sup> [Technical Advisory Group: sustaining COVID-safe behaviours in Wales, August 2021](#)

<sup>17</sup> [Ventilation and air conditioning during the coronavirus \(COVID-19\) pandemic, Health and Safety Executive](#)



green. Readings will be taken regularly and used to identify any issues with ventilation. Research associated with the large-scale use of CO<sub>2</sub> monitors in real-world settings will provide valuable evidence to inform further developments.

- To illustrate the continued contribution of the interventions set out above in the COVID-Code, recent analysis from the Covid-19 infection survey<sup>18</sup> shows that people who never wore a face covering in enclosed spaces were more likely to test positive for COVID-19 in the fortnight ending 11 September 2021. Similarly, those who reported socially distanced contact with 11 or more people aged 18 to 69 years outside their household were more likely to test positive for COVID-19.

## 5. Reproduction Number

- The balance of harms has changed in that the relationship between cases and deaths has been lessened, as has hospitalisations. This is observable in the current rate of admissions and deaths from COVID-19. A key factor in controlling COVID-19 is the ability of the NHS to cope with demand from COVID-19 patients.
- The calculations behind  $R_t$  estimates include case data, but also hospitalisation and deaths; as they are all indirectly measuring  $R_t$ .  $R_t$  will therefore remain a relevant indicator to monitor. As we move to endemic state, the reproduction number should remain around 1.
- Current TTP policy includes the identification of cases, therefore the calculation of the reproduction number of cases can continued to be used to support TTP workforce planning.
- Other metrics such as doubling times are also helpful in helping understand whether, and when COVID infection rates might overwhelm NHS capacity.
- Whilst  $R_t$  remains a key indicator that we will continue to monitor, it is important to look at a set of indicators that represent the wider impacts of infection, including: what impact COVID-19 and other respiratory infections is having on population health and the NHS and Social Care in Wales; whether people in Wales are vaccinated, and whether they have protection from the circulating variants; the situation in key settings, such as schools, colleges, universities, and prisons; and the international situation.

## 6. Work from Home Data

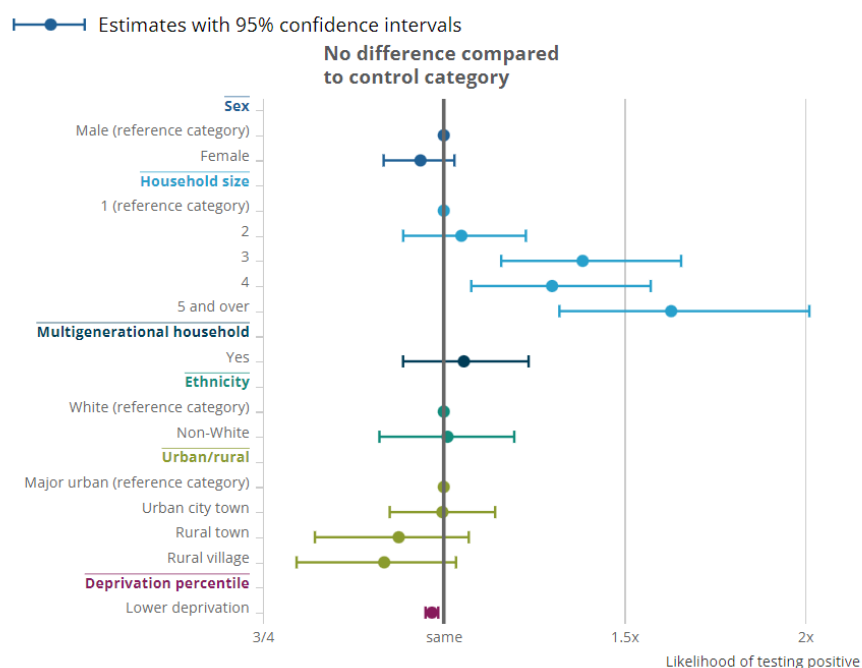
### Population mixing

- Analysis of populations in the UK by risk of testing positive for COVID-19 from the COVID-19 Infection Survey (data from 29 August to 11 September 2021)<sup>18</sup>

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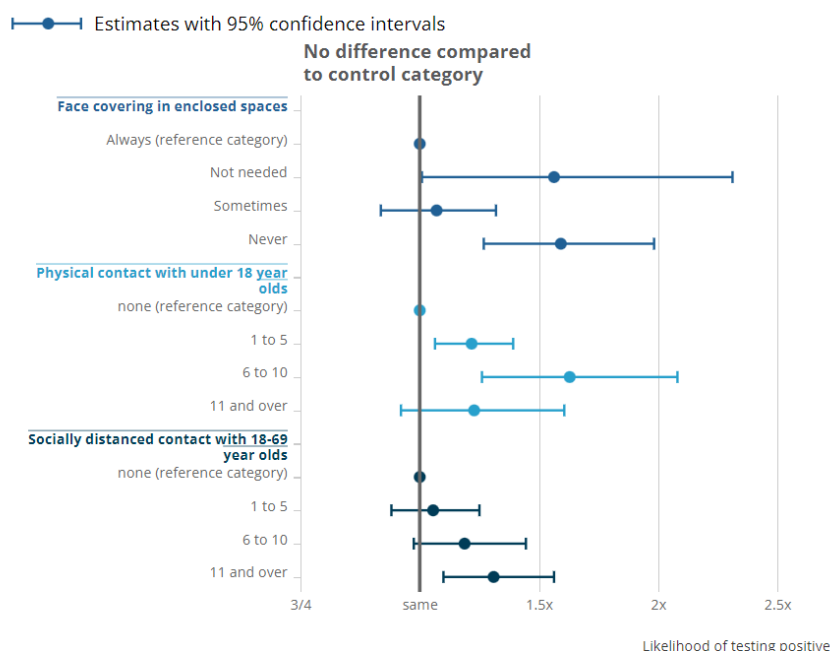
<sup>18</sup> [Coronavirus \(COVID-19\) Infection Survey technical article: analysis of populations in the UK by risk of testing positive for COVID-19, Office for National Statistics, September 2021](#)

has shown that people in the UK living in a household of three or more occupants were more likely to test positive for COVID-19. See chart below.



Source: Office for National Statistics - Coronavirus (COVID-19) Infection Survey

- People who reported socially distanced contact with adults aged 18 to 69 years were more likely to test positive for COVID-19, see chart below.



Source: Office for National Statistics - Coronavirus (COVID-19) Infection Survey

- Data from the UK CoMix social contact survey<sup>19</sup> indicate the following:
  - Mean contacts for children remain higher as schools are now open. Mean reported contacts for those aged 12-17 years are similar to before the summer break. Mean reported contacts for those aged 5-11 years are slightly lower.
  - The overall reported contact rate for adults is similar to levels seen over the last month.
  - Contacts for those attending work continue to be higher than those not attending, though there does not appear to be a larger absolute difference in the leisure (other) contacts of those attending work versus those who do not, with both having less than 2 leisure contacts per person per day.
- Supported by numerous data sources, SAGE and TAG<sup>20</sup> have previously advised that working from home is one of the key protective behaviours that can help minimise COVID-19 transmission. It is likely to also reduce transmission of other viruses and bacteria.
- As previously highlighted by TAG<sup>21</sup>, there are potential benefits and disbenefits of working from home, all of which need to be considered systematically with an appropriate evidence base.

## 7. Self-Isolation of Household Contacts

- Isolation of people likely to be infectious remains important for reducing transmission. Work is ongoing in PHW to consider secondary attack rates for delta in households.
- Recent analysis by ONS as part of the COVID Infection Survey suggests that people living in a household of three or more occupants were more likely to test positive for COVID-19 in the fortnight ending 11 September 2021.
- As described previously<sup>21</sup>, indirect harms associated with self-isolation include lower productivity and educational losses as well as harms associated with reduced health and care capacity when staff self-isolate. There will be a mental health impact for people who may be repeatedly required to self-isolate, especially those from disadvantaged communities, those with no garden spaces and those on low incomes.
- Inequalities may also arise as those in occupations at most risk of infection could be most impacted, predominantly in the health and care professions as well as key workers such as those working in public transport and education.
- Analysis has shown that key workers are most often women, with available data indicating that more than half of employees of Bangladeshi ethnicity and

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<sup>19</sup> [CoMix study - Social contact survey in the UK, Week 78 report, 28 September 2021](#)

<sup>20</sup> [SPI-M-O: Consensus statement on COVID-19, 8 September 2021, Technical Advisory Group: sustaining COVID-safe behaviours in Wales \[HTML\] | GOV.WALES](#)

<sup>21</sup> [Five Harms arising from COVID-19: Consideration of Potential Baseline Measures, Technical Advisory Group, July 2021](#)

half of Black, African, Caribbean and Black British employees work are critical workers.<sup>22</sup>

## 8. Impact of Booster and 12-15 Vaccination Campaigns

- Swansea University are planning to include the impact of booster vaccines and vaccinating 12–15-year-olds in a future iteration of the models they produce for Welsh Government.
- The latest policy modelling paper published in September<sup>23</sup> noted that:
  - In this third wave, and with emerging evidence of waning immunity, we are still in a race between vaccines and the Delta variant. School closures may have reduced mixing over the summer, but increased mixing from easing restrictions acted as an additional opposing force. The recent return to school means there will likely be continued high transmission in children and young people so any policy response needs to consider the balance of harms to children.
  - Changes to TTP self-isolation rules may have increased transmission; previous modelling suggested this could increase  $R_t$  by approximately 0.2, based on recently observed  $R_t$  values.
  - Vaccines are having to do more heavy lifting because of high prevalence; they might be less effective as force of infection increases.

## 9. Influenza and COVID Modelling

- Modelling of flu (influenza) and RSV (respiratory syncytial virus) has already been undertaken, to complement the regular update of COVID-19 models that TAG publish. The full report can be found [here](#). The summary points are provided below.
- Other respiratory viruses such as flu and RSV were largely absent in winter 2020/21 but are likely to recur and may rebound at a higher rate than a typical winter. This is partly due to an ‘immunity debt’ where lack of exposure means low immunity; for example, in 1–2-year-olds who have not been exposed to RSV. In general, nearly 90% of children may be infected with RSV in the first two years of life, but a small proportion may develop bronchiolitis and need hospital treatment including, for some, paediatric ICU.
- RSV cases and admissions have increased in Wales and the RSV season began 15 weeks earlier than normal (in July) but may be plateauing now, as may also be the case in parts of England. There was an initial peak followed by a fall in RSV cases in the north-west of England, although this fall is partly due to reduced RSV testing in Manchester hospitals.

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<sup>22</sup> [Coronavirus and employment: analysis of protected characteristics, June 2020](#)

<sup>23</sup> [Technical Advisory Group: winter modelling update, 10 September 2021](#)

- Both flu and RSV may show asynchronous growth in different parts of Wales, and the impact of flu will depend on type, clade and vaccine composition.
- Flu vaccines are less effective than the COVID vaccines and are not effective enough to reach an effect similar to herd immunity. However, there is evidence that repeated annual vaccination boosts effectiveness. Awareness of COVID might increase flu vaccine uptake. Flu vaccines are being rolled out to more children and young people than in previous years (up to secondary school year 11).
- There is currently no RSV vaccine in use although very high-risk infants are given monthly injections of the monoclonal antibody palivizumab to prevent severe disease caused by RSV – this is around 50% effective.
- Current modelling carried out by Public Health Wales (PHW) is based on detecting the onset of annual flu and RSV epidemics and providing a series of thresholds to compare severity against historical seasons. This is the World Health Organisation/European Centre for Disease Prevention and Control (ECDC) agreed approach for seasonal respiratory infection surveillance, which allows for comparison of thresholds reached in different countries. This allows PHW to compare seasons to historical seasons with very high/high/medium/low levels of severity for scenario planning, and to highlight any relevant antigenic differences in emerging influenza viruses. There may be an increased chance of vaccine mismatch this winter as there has been very little flu activity in the southern hemisphere in their winter/our summer.
- Modelling shared with JCVI has suggested that the 2021-22 flu season could be 50%-100% higher than a typical season and could peak at a different time.<sup>16</sup>
- There are other viruses like the common cold (especially rhinovirus), parainfluenza, adenovirus and metapneumovirus, that can cause acute respiratory illness and lead to hospital admissions which are not explicitly considered here.
- The scenarios reported suggest that we may see greater than normal flu and RSV seasons, which may be shifted in time from their normal peaks. When combined with other pressures on the NHS this may pose particular challenges.
- It may be that individual behaviours and other changes in terms of infection prevention and control in health and social care, will have longer term effects in preventing transmission of several viruses. However, this remains to be seen and we need to prepare for the possibility of very challenging conditions with lots of viruses in circulation.
- Continued surveillance of infections in schools; supply, uptake and effectiveness of vaccines, and the impact and spread of COVID variants and other virus types, is crucial in helping to understand the trajectory in Wales.
- TAG are currently working on some combined scenarios to model several viruses simultaneously and estimate potential combined impacts of respiratory pressures on the NHS. This may be more important because of the backlog of elective care which is in turn putting pressure on emergency care in the NHS.